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10/717,621	11/21/2003	Hye-Yeon Kim	030681-591	8611
21839 7590 07/25/2007 BUCHANAN, INGERSOLL & ROONEY PC POST OFFICE BOX 1404 ALEXANDRIA, VA 22313-1404			EXAMINER BLOOM, NATHAN J	
			ART UNIT 2624	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/717,621

Applicant(s)

KIM ET AL.

Examiner

Nathan Bloom

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 27 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-75 is/are pending in the application.
- 4a) Of the above claim(s) 12-24, 47-59 and 72 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11, 25-46, 60-71, 73-75 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 04/20/2004 and 01/13/2005.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

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## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Species I in the reply filed on April 27, 2007 is acknowledged. The traversal is on the ground(s) that the inclusion of Species II in the examination would not pose an undue burden on the Office. This is not found persuasive because there is no further argument as to why both these species should be included only a generic statement.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 12-24, 47-59, and 72 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on April 27, 2007.

3. Applicant elected claim 72 that is of the same scope as the non-elected claim 47 of Species II. As noted above claim 72 is withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Species.

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 7-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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3. Claim 7 recites the limitations "|b-a|" and "|c-a|" in lines 4 and 5 of claim 7. There is insufficient antecedent basis for this limitation in the claim.

The limitation "a" remains undefined.

4. Claim 8 recites the limitations "|a-c| or |a-E|" and "|a-b| or |a-F|" in lines 1, 4 and 8 of claim 8. There is insufficient antecedent basis for this limitation in the claim.

The limitation "a" remains undefined.

***Claim Rejections - 35 USC § 101***

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the requirements of this title.

Spoke with  
Andy Johns,  
but will talk to  
Aval. if you'd  
like.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claims that recite nothing but the physical characteristics of a form of energy, such as a frequency, voltage, or the strength of a magnetic field, define energy or magnetism, per se, and as such are nonstatutory natural phenomena. O'Reilly, 56 U.S. (15 How.) at 112-14. Moreover, it does not appear that a claim reciting a signal encoded with functional descriptive material falls within any of the categories of patentable subject matter set forth in Sec. 101.

... a signal does not fall within one of the four statutory classes of Sec. 101.

... signal claims are ineligible for patent protection because they do not fall within any of the four statutory classes of Sec. 101.

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Claim(s) 71 and 73-75 is/are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claims 71 and 73-75 are drawn to functional descriptive material recorded on a computer-readable recording medium. Normally, the claim would be statutory. However, the specification, at page 22 defines the claimed computer readable medium as encompassing statutory media such as a "ROM", "RAM", "optical drive", etc, as well as *non-statutory* subject matter such as "carrier waves, such as data transmission through the internet".

A "signal" embodying functional descriptive material is neither a process nor a product (i.e., a tangible "thing") and therefore does not fall within one of the four statutory classes of § 101. Rather, "signal" is a form of energy, in the absence of any physical structure or tangible material.

Because the full scope of the claim as properly read in light of the disclosure encompasses non-statutory subject matter, the claim as a whole is non-statutory. The examiner suggests amending the claim to include the disclosed tangible computer readable media, while at the same time excluding the intangible media such as signals, carrier waves, etc. Any amendment to the claim should be commensurate with its corresponding disclosure.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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2. Claims 1 and 3-7, 25-27, 29-30, 36, 38-42, and 60-64 are rejected under 35 U.S.C. 102(e) as being anticipated by Greggain (US 6219464).

Instant claim 1: An apparatus for enhancing the quality of reproduced images, comprising:

a vertical area existence determination unit which determines whether or not an edge included in an input pixel belongs to a vertical area; *[Figures 1-3, column 5 line 45 to column 6 line 25, wherein the absolute difference (the measure of possibility) of the pixels in the slant line and vertical directions are taken. Figure 10 and 104 of Figure 8.]*

a slant line possibility determination unit which determines whether or not there is a possibility of the edge forming a slant line when the edge is determined to not belong to the vertical area; *[Figures 1 and 2, column 5 line 45 to column 6 line 25, wherein the absolute difference (the measure of possibility) of the pixels in the slant line and vertical directions are taken. Figure 10 and 104 of Figure 8.]*

a direction determination unit which determines a direction of the slant line when the edge is determined to possibly form the slant line; and *[Column 6 line 25 to column 7 line 59, wherein based on thresholds and comparison of the absolute values the direction of the edge is determined. Figure 10 and 104 of Figure 8.]*

an interpolation unit which calculates an interpolated pixel value for the input pixel based on the determination results provided by the vertical area existence determination unit, the slant line possibility determination unit, and the direction determination unit. *[Column 7 lines 25-32 wherein based on the determined direction (vertical or one of the oblique angles), and the*



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*vertical/slant line possibility determination the interpolation is performed. Figure 8, wherein interpolated value is output as w at 106.]*

Instant claim 3: The apparatus of claim 1, wherein the vertical area existence determination unit determines that the input pixel exists in the vertical area when a difference (a) between values of upper and lower pixels, vertically adjacent to the input pixel, is smaller than a predetermined threshold value and determines that the input pixel exists in the slant line area when the difference (a) is greater than the predetermined threshold value. [*Column 6 lines 25-40 (see Figures 7A and 7B for the flowchart), wherein if the vertical difference is below the threshold (threshold is the lowest of the difference of the 2 oblique directions) the vertical direction is chosen, and if the vertical difference is greater than the threshold (minimum oblique difference) then the oblique (slant) direction is chosen.*]

Instant claim 4: The apparatus of claim 1, wherein the slant line possibility determination unit determines that the edge included in the input pixel may have a slant-line shape when a predetermined number of values among differences between values of two pixels, arranged at each side of the upper pixel, and values of their vertically corresponding pixels are not smaller than the predetermined threshold value and are obtained using two pixels located at one or the other side of the upper pixel and their diagonally corresponding pixels. [*Column 6 lines 25-40 (see Figures 7A and 7B for the flowchart), wherein either of the two pixels in the top row can be considered the upper pixel. If at least one of the oblique (slant) direction differences is below the threshold (threshold is the difference in the vertical direction) the interpolation is performed in the oblique direction. As can be seen in figures 1-3 the pixels are arranged at either side and differences are of the diagonally corresponding pixels.*]

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Instant claim 5: The apparatus of claim 1, wherein the slant line possibility determination unit determines that the edge included in the input pixel may have a slant-line shape when differences between values of two pixels, arranged at one side of the upper pixel, and values of their diagonally corresponding pixels are smaller than the difference (a) between the upper and lower pixels and are also smaller than differences between values of two pixels, arranged at the other side of the upper pixel, and values of their diagonally corresponding pixels. *[Column 6 lines 25-40 (see Figures 7A and 7B for the flowchart), wherein either of the two pixels in the top row can be considered the upper pixel. If at least one of the oblique (slant) direction differences is below the threshold (threshold is the difference in the vertical direction) the interpolation is performed in the oblique direction. As can be seen in figures 1-3 the pixels are arranged at either side and differences are of the diagonally corresponding pixels.]*

Instant claim 6: The apparatus of claim 1, wherein the direction determination unit comprises: a direction estimator which estimates the direction of the slant line when it is determined that there is a possibility of the edge having a slant-line shape; and *[See rejection of instant claim 1 wherein direction is selected/estimated based on minimum value criteria.]*

a precision determiner which determines precision of the estimation. *[Greggain teaches a measure of precision in lines 14-25 of column 7. The particular section states that there is a minimum allowable difference (between the magnitude of the differences of the oblique directions) that must be met else the vertical direction is chosen. This threshold is a determination of whether or not there is minimal difference (possibly due to just noise) wherein when the difference between is lower than the minimal threshold the precision of this direction (oblique) decision is low and thus the direction defaults to a vertical direction.]*



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Instant claim 7: The apparatus of claim 6, wherein when a difference (b-c) between a difference (b) between the values of two pixels diagonally adjacent to the input pixel and a difference (c) between the values of the other two pixels diagonally adjacent to the input pixel is smaller than or greater than 0,  $|b-c|$  and  $|b-a|$  (or  $|c-a|$ ) are greater than a predetermined threshold value, the direction estimator estimates the slant line to extend along a direction indicated by a smaller value between b and c. *[Greggain: Lines 14-25 of column 7, wherein if the oblique differences are within a threshold then the vertical direction is chosen else the smallest of the two is chosen as the direction of interpolation.]*

Instant claims 25-27, 60, 62, and 64 are encompassed by the limitations of instant claims 1, 4, 6 and 7 and as per rejection of instant claims 1, 4, 6, and 7 the apparatus of claims 25-27 and the method of claims 60, 62, and 64 have been disclosed since the disclosed apparatus performs the method (See figures 7A&B of Greggain show method flowchart and corresponding disclosure in specification.).

Instant claims 29-30, 61, and 63 are encompassed by the limitations of instant claims 1, 5 and 6 and as per rejection of instant claims 1, 5, and 6 the apparatus of claims 29-30 and the method of claims 61 and 63 have been disclosed since the disclosed apparatus performs the method (See figures 7A&B of Greggain show method flowchart and corresponding disclosure in specification.).

Instant claims 36 and 38-42 are encompassed by the limitations of instant claims 1 and 3-7 and as per rejection of instant claims 1 and 3-7 the method of claims 36 and 38-42 have been

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disclosed since the disclosed apparatus performs the method (See figures 7A&B of Greggain show method flowchart and corresponding disclosure in specification.).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 71 and 73-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greggain.

Instant claims 71 and 73-74 encompass the computer readable media that perform the method of claims 36 and 60-61. As per rejection of instant claims 36 and 60-61 the method has been disclosed. However, Greggain does not disclose the storing or implementation of this method in software. Examiner takes Official Notice that it was notoriously well known to one of ordinary skill in the art to implement this method in software and store it on a CRM at the time of the invention.

5. Claims 8, 31, 43, and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greggain as applied to claims 1 and 6-7 above, and further in view of Ma (US 6836572).

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Instant claim 8: The apparatus of claim 6, wherein when a difference (a-c or a-E) between a and each of the differences c and E between values of two pixels, arranged at one side of the upper pixel, and values of their diagonally corresponding pixels or a difference (a-b or a-F) between a and each of the differences b and F between values of two pixels, arranged at the other side of the upper pixel, and values of their diagonally corresponding pixels is greater than a predetermined threshold value, c and E are greater than or smaller than b and F, respectively, and  $|c-b|$  or  $|E-F|$  is not greater than a predetermined threshold value, the direction estimator estimates the slant line to extend along a direction indicated by a minimum among b, c, E, and F. *[As per rejection of instant claim 7 Greggain teaches the thresholding of the differences between the absolute differences of opposite pixels in order to further select/estimate the direction for interpolation, but Greggain only teaches this for a set of 3 pixel differences. However, Ma in columns 2-4 teaches a set of 8 pixel differences with an interpolation direction associated with each. Given that Greggain has taught the direction estimation for a set of smaller pixels it would have been obvious to one of ordinary skill in the art in view of Ma to expand Greggain's teachings to include more interpolation direction thus increasing the accuracy of pixel to be interpolated by increasing the edge direction resolution (number of directions available to interpolate).]*

Instant claims 31 and 65 are encompassed by the limitations of instant claims 3 and 8 and as per rejection of instant claims 3 and 8 the apparatus of claim 31 and the corresponding method of claim 65 have been disclosed since the apparatus performs the described method.

Instant claims 43 are encompassed by the limitations of instant claim 8 and as per rejection of instant claims 8 the corresponding method of claims 43 have been disclosed since the disclosed

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apparatus performs the method. Furthermore, figures 7A&B of Greggain show the method flowchart and the method steps for Ma are shown in figures 2-3 and further detail is provided in the corresponding portion of the specification.

6. Claims 10, 33, 45, 68 and 75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greggain as applied to claims 1 and 6-7 above, and further in view of Ma (US 6836572) and Westerman (US 6262773).

Instant claim 10: The apparatus of claim 1, wherein the interpolation unit obtains the interpolated pixel value using values of upper three cells and lower three pixels with respect to the input pixel, which belong to the same row as the input pixel but different columns from one another, when the edge included in the input pixel is determined to belong to the vertical area, and obtains the interpolated pixel value using the values of four pixels diagonally adjacent to the input pixel when the edge included in the input pixel is determined to belong to the slant line area. *[Greggain teaches the use of 2 upper and 2 lower pixels as can be see in figure 1, but does not teach the use of more than 2 pixels in a row or the interpolation of more than 2 pixels (4 in particular) in the slant direction. However, as per rejection of instant claim 8 the use of more than 2 pixels on the upper and lower levels was known to one of ordinary skill in the art, and would have been obvious to use with Greggain to increase the accuracy/resolution of the directional interpolation technique. The interpolation of 4 or more pixels has been taught by Westerman in figures 8-17 which show the pixel to be interpolated as the X and the pixel to be used for interpolation as the slant selection as can be clearly seen figure 17. It would have been*

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*obvious to one of ordinary skill in the art to combine the teachings of Westerman with Greggain to reduce the error of the interpolated value.]*

Instant claims 33 and 68 are encompassed by the limitations of instant claim 10 and as per rejection of instant claim 10 the apparatus of claim 33 and the method that the apparatus performs as is described in claim 68 have been disclosed (See figures 7A&B of Greggain and figures 2-3 of Ma that show the method flowcharts, also see the corresponding disclosure in the specifications.). Furthermore, the fields shown in figures 1A-1C of Ma are alternating odd and even fields wherein the even fields have the known pixel values and the odd fields have the pixels values to be interpolated.

Instant claim 45 are encompassed by the limitations of instant claim 10 and as per rejection of instant claim 10 the corresponding method of claim 45 have been disclosed since the disclosed apparatus performs the method. Furthermore, figures 7A&B of Greggain show the method flowchart and the method steps for Ma are shown in figures 2-3 and further detail is provided in the corresponding portion of the specification.

Instant claim 75 is the computer readable medium that performs the method of claim 68. As per rejection of instant claim 68 the method has been disclosed. However, Greggain does not disclose the storing or implementation of this method in software. Examiner takes Official Notice that it was notoriously well known to one of ordinary skill in the art to implement this method in software and store it on a CRM at the time of the invention.

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7. Claims 2, 11, 37, 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greggain as applied to claim 1 above, and further in view of Takeda (US 5894329).

Instant claim 2: The apparatus of claim 1 further comprising an adjusted pixel value calculation unit which compares the interpolated pixel value with an original input pixel value and adjusts the interpolated pixel value based on the comparison result. *[Greggain does not teach the comparison of the interpolated pixel value with that of the original (or pervious/next pixel). However, Takeda teaches in column 3 line 60 to column 4 line 7 an interlaced to progressive conversion method in which the pixel of the previous scan line is compared to the interpolated pixel and if comparison result greater than a threshold the interpolated data is used (if less than the original or previous scan line data is used for that particular pixel). It would have been obvious to combine Greggain with Takeda to reduce the amount of pixel error caused by the conversion method.]*

Instant claim 11: The apparatus of claim 2, wherein the adjusted pixel value calculation unit designates the original input pixel value as an output pixel value when a difference between the interpolated pixel value and the original input pixel value is not greater than a predetermined threshold value and designates the interpolated pixel value as the output pixel value when the difference between the interpolated pixel value and the original input pixel value is greater than the predetermined threshold value. *[See rejection of instant claim 2.]*

Instant claims 37 and 46 are encompassed by the limitations of instant claims 2 and 11 and as per rejection of instant claims 2 and 11 the method of claims 37 and 46 have been disclosed since the



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disclosed apparatus performs the method. Furthermore, figures 7A&B of Greggain show the method flowchart and the method steps for Takeda are listed within the same section referenced above.

8. Claims 34-35 and 69-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greggain in view of Ma and Westerman as applied to claim 10 above and Greggain and Takeda as applied to claims 2 and 11 above, and further in view of Ma and Takeda.

Instant claims 34-35 and 69-70 are encompassed by the limitations of instant claims 2 and 10-11. The rejection of instant claims 2 and 11 by Greggain in view of Takeda taught the comparison of the interpolated pixel to that of the original pixel and would have been obvious to one of ordinary skill in the art to combine the teachings of Greggain and Takeda to reduce the amount of pixel error caused by the conversion method. Furthermore, the rejection of instant claim 10 by Greggain in view of Ma taught that the differencing and thresholding of a set of 8 pixels would have been obvious to one of ordinary skill in the art to increase the accuracy of the directional interpolation technique as taught by Greggain. Thus, as per rejection of instant claims 2 and 10-11 the apparatus of instant claims 34-35 and the method of instant claims 69-70 have been disclosed since the apparatus performs the method. Furthermore, the additional limitation in claims 33-35 and 68-70 (that is not in claim 10) that the fields are odd/even fields has been disclosed as can be seen by figures 1A-1C of Ma that are alternating odd and even fields wherein the even fields have the known pixel values and the odd fields have the pixels values to be interpolated.

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9. Claims 9, 28, 32, 44, and 66-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greggain as applied to claim 1 above, and further in view of Yoo (US 2003/0112369).

Instant claim 9: The apparatus of claim 6, wherein the precision determiner determines the estimation of the direction of the slant line to be precise when the direction estimator estimates the slant line to be tilted rightward (or leftward), the difference  $a$  between the values  $f$  and  $k$  of the upper and lower pixels, a difference between  $k$  and a value  $g$  of an upper right pixel, a difference between  $g$  and a value  $j$  of a lower left pixel, and a difference between  $f$  and  $j$  are not smaller than a predetermined threshold value. *[The pixels of this claim denoted  $k$ ,  $f$ ,  $g$ , and  $j$  are recognized as arbitrary upper and lower pixels. Greggain teaches the differencing of upper and lower pixels, but does not teach the use of a threshold value for comparing these absolute values to in order to measure the precision of the directional choice. However, Yoo in paragraph 0085 teaches the comparison of the directional differences to a threshold value (TH\_VAL) and if the values are less than the threshold then the chosen leftward/rightward (positive/negative slope) directionality are considered imprecise at which point a reevaluation of the directionality is performed.]*

Instant claims 28, 32, 44, and 66-67 are encompassed by the limitations of instant claims 3-4 and 9 and as per rejection of instant claims 3-4 and 9 the apparatus of claims 28, 32 and the method of claims 44 and 66-67 as performed by the disclosed apparatus have been disclosed.

### **Conclusion**

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10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Ishiga (US 6836572) – related to claims 6-7 in that it teaches determination of precision.

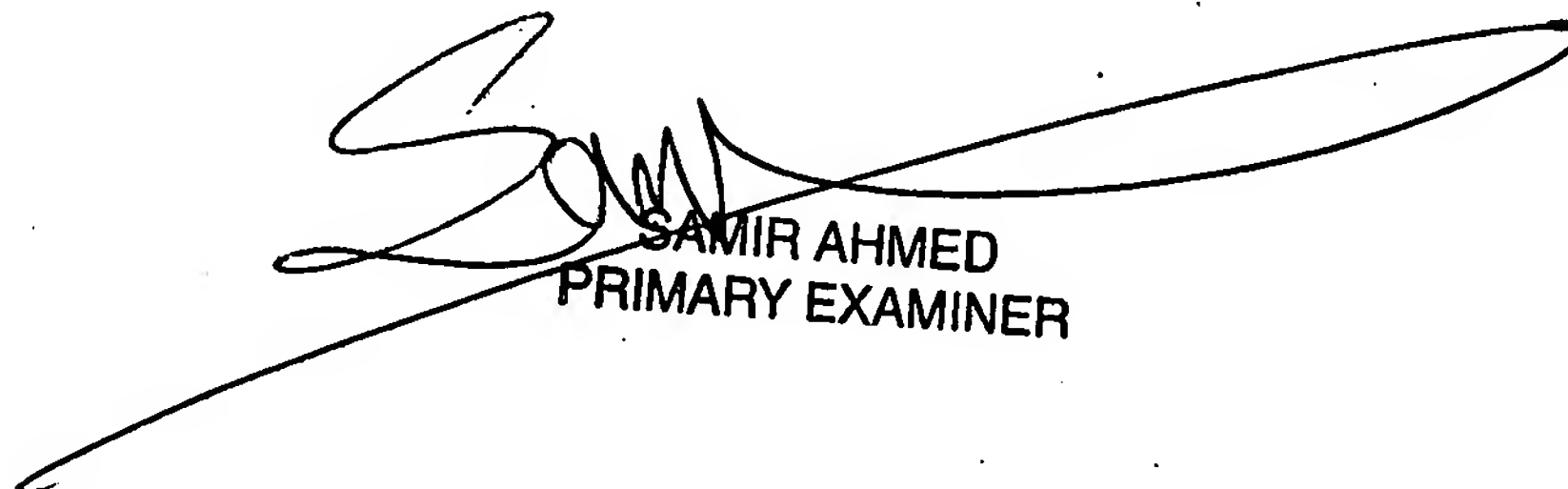
***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Bloom whose telephone number is 571-272-9321. The examiner can normally be reached on Monday through Friday from 8:30 am to 5:00 pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed, can be reached on 571-272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nathan Bloom

  
SAMIR AHMED  
PRIMARY EXAMINER